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=> s (s. aureus or staphylococcus aureus)/bi,ab

1952972 S/BI

41021 AUREUS/BI

11713 S. AUREUS/BI

((S(W)AUREUS)/BI)

1807098 S/AB

36560 AUREUS/AB

11603 S. AUREUS/AB

((S(W)AUREUS)/AB)

45940 STAPHYLOCOCCUS/BI

41021 AUREUS/BI

36750 STAPHYLOCOCCUS AUREUS/BI

((STAPHYLOCOCCUS(W)AUREUS)/BI)

33072 STAPHYLOCOCCUS/AB

36560 AUREUS/AB

27505 STAPHYLOCOCCUS AUREUS/AB

((STAPHYLOCOCCUS(W)AUREUS)/AB)

L1 38123 (S. AUREUS OR STAPHYLOCOCCUS AUREUS)/BI,AB

=> s ll and (hexahydro beta acid or hexahydro beta salt or tetrahydroiso alpha acid or tetrahydroiso salt)bi,ab

MISSING OPERATOR SALT) BI, AB

The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s l1 and (hexahydro beta acid or hexahydro beta salt or tetrahydroiso alpha acid or tetrahydroiso salt)/bi,ab

11126 HEXAHYDRO/BI 1009964 BETA/BI 2968763 ACID/BI

```
O HEXAHYDRO BETA ACID/BI
                ((HEXAHYDRO(W)BETA(W)ACID)/BI)
          6236 HEXAHYDRO/AB
        893678 BETA/AB
       2053735 ACID/AB
             O HEXAHYDRO BETA ACID/AB
                 ((HEXAHYDRO(W)BETA(W)ACID)/AB)
         11126 HEXAHYDRO/BI
       1009964 BETA/BI
        536217 SALT/BI
             O HEXAHYDRO BETA SALT/BI
                 ((HEXAHYDRO(W)BETA(W)SALT)/BI)
          6236 HEXAHYDRO/AB
        893678 BETA/AB
        409587 SALT/AB
             O HEXAHYDRO BETA SALT/AB
                 ((HEXAHYDRO(W)BETA(W)SALT)/AB)
            79 TETRAHYDROISO/BI
       1173645 ALPHA/BI
       2968763 ACID/BI
             4 TETRAHYDROISO ALPHA ACID/BI
                 ((TETRAHYDROISO(W)ALPHA(W)ACID)/BI)
            71 TETRAHYDROISO/AB
       1030274 ALPHA/AB
       2053735 ACID/AB
             2 TETRAHYDROISO ALPHA ACID/AB
                 ((TETRAHYDROISO(W)ALPHA(W)ACID)/AB)
            79 TETRAHYDROISO/BI
        536217 SALT/BI
             O TETRAHYDROISO SALT/BI
                 ((TETRAHYDROISO(W)SALT)/BI)
            71 TETRAHYDROISO/AB
        409587 SALT/AB
             O TETRAHYDROISO SALT/AB
                 ((TETRAHYDROISO(W)SALT)/AB)
             O L1 AND (HEXAHYDRO BETA ACID OR HEXAHYDRO BETA SALT OR
TETRAHYDRO
               ISO ALPHA ACID OR TETRAHYDROISO SALT)/BI,AB
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                                                  SINCE FILE
                                                      ENTRY
                                                                SESSION
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                                                                 47.03
FULL ESTIMATED COST
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     FILE 'CA' ENTERED AT 20:37:08 ON 30 AUG 2001
          38123 S (S. AUREUS OR STAPHYLOCOCCUS AUREUS)/BI,AB
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0 S L1 AND (HEXAHYDRO BETA ACID OR HEXAHYDRO BETA SALT OR

L2

L1

L2

TETRAHY

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FILE 'USPATFULL, EMBASE, MEDLINE, BIOSIS' ENTERED AT 20:42:05 ON 30 AUG
     2001
=> s 12
'AB' IS NOT A VALID FIELD CODE
             0 L2
=> s (hexahydro beta acid or hexahydro beta salt or tetrahydroiso alpha acid
or tetrahydroiso salt)/bi,ab
'AB' IS NOT A VALID FIELD CODE
             4 (HEXAHYDRO BETA ACID OR HEXAHYDRO BETA SALT OR TETRAHYDROISO
L4
               ALPHA ACID OR TETRAHYDROISO SALT)/BI,AB
=> d 1-4 bib,ab
     ANSWER 1 OF 4 USPATFULL
1.4
       1999:24849 USPATFULL
AN
TΙ
       Concentrated single phase aqueous solutions of tetrahydroiso-.alpha.-
       acids and methods of preparing the same
       Ting, Patrick L., Brookfield, WI, United States
       Goldstein, Henry, Brookfield, WI, United States
PΑ
       Miller Brewing Company, Milwaukee, WI, United States (U.S. corporation)
PΤ
       US 5874633
                               19990223
ΑI
       US 1996-739910
                               19961030 (8)
DT
       Utility
FS
       Granted
EXNAM Primary Examiner: Hutzell, Paula K.; Assistant Examiner: Masood, Khalid
       Quarles & Brady
CLMN
       Number of Claims: 25
ECL
       Exemplary Claim: 1
DRWN
       No Drawings
LN.CNT 325
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
       A concentrated single phase aqueous alkaline solution of
       tetrahydroiso-.alpha.-acids having greater than 10% to about 45% w/w
       tetrahydroiso-.alpha.-acids is disclosed. A method of hydrogenating and
       formulating a starting solution of iso-.alpha.-acids to obtain such
       concentrated solutions of tetrahydroiso-.alpha.-acids is also
disclosed.
     ANSWER 2 OF 4 USPATFULL
L4
ΑN
       75:65759 USPATFULL
ТΙ
       Production of hoplike beverage bittering materials
IN
       Worden, Leonard R., Kalamazoo, MI, United States
PA
       Kalamazoo Spice Extraction Company, Kalamazoo, MI, United States (U.S.
       corporation)
PΙ
       US 3923897
                               19751202
ΑI
       US 1973-346741
                               19730402 (5)
DТ
       Utility
FS
       Granted
EXNAM Primary Examiner: Morgenstern, Norman
LREP
       Hueschen, Gordon W.
       Number of Claims: 15
CLMN
ECL
       Exemplary Claim: 1,7
       No Drawings
LN.CNT 639
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB
       Production of hoplike beverage bittering materials by the peracid
       oxidation of 3',5'-dialkyl-2',4',6'-trihydroxyacylphenones to
       6-acyl-2, 4-dialkyl-2-hydroxycyclohexane-1, 3, 5-triones
```

(tetrahydrohumulones or tetrahydro-alpha acids) and isomerization

thereof to 2,4-diacyl-5-alkyl-4-hydroxycyclopentane-1,3-diones (tetrahydroisohumulones or tetrahydroiso-alpha acids).

Chart i: conversion of beta acids into flavoring materials in the tetrahydro-alpha acids family ##SPC1##

3',5'-dialkyl-2',4',6'-trihydroxyacylphenones (desoxytetrahydro-alpha acids) ##SPC2##

6-acyl-2,4-dialkyl-2-hydroxycyclohexane-1,3,5-triones (tetrahydrohumulones) (tetrahydro-alpha acids) ##SPC3##

R.sup.1, r.sup.2, and R.sup.3 are various alkyl groups which may or may not be identical, e.g., in the formulas above, if R.sup.2 = R.sup.3 = CH.sub.2 CH.sub.2 CH(CH.sub.3).sub.2 = isopentyl and R.sup.1 = -CH.sub.2 CH(CH.sub.3).sub.2 = isobutyl, the compound I becomes desoxytetrahydrohumulone = 3',5'-diisopentyl-2',4',6'-trihydroxyisovalerophenone and III becomes tetrahydroisohumulone.

Similarly, when R.sup.2 and R.sup.3 are isopentyl and R.sup.1 is --CH(CH.sub.3)CH.sub.2 CH.sub.3 or --CH(CH.sub.3).sub.2, the starting material (I) is respectively desoxytetrahydroadhumulone and desoxytetrahydrocohumulone, the intermediates II become tetrahydroadhumulone and tetrahydrocohumulone, and the end products III become tetrahydroisoadhumulone and tetrahydroisocohumulone.

For clarity, it should be stated here that desoxytetrahydro-alpha acids are herin designated by I and may also be designated a 3',5'-dialkyl-2',4',6'-trihydroxyacylphenone, that the intermediate tetrahydrohumulone is herein designated by II and may also be designated

a tetrahydro-alpha acid or a 6-acyl-2,4-dialkyl-2-hydroxycyclohexane-1,3,5-trione, and that the ultimate end product, the tetrahydroisohumulone, is herein designated III and may sometimes be designated a **tetrahydroiso-alpha acid** or a 2,4-diacyl-5-alkyl-4-hydroxycyclopentane-1,3-dione. Moreover, sometimes the terms "alpha acids" and "iso-alpha acids" are employed herein without the "tetrahydro" prefix, without any intention, however, to define a different material when such abbreviation is employed. Such abbreviation, when employed, will be apparent to one skilled in the

art.

To conform with current nomenclature practice, lupulones are usually referred to herein as beta acids; tetrahydrohumulones (II) as tetrahydro-alpha acids; and tetrahydroisohumulones (III) as tetrahydroiso-alpha acids. It should be recognized, however, that the terms alpha acids, "beta acids," and "iso-alpha acids" are used herein in a generic sense and are not meant to limit the various alkyl groups R.sup.1, R.sup.2, and R.sup.3 (Chart I) to groups found in naturally-occurring substances, the present invention being equally applicable to synthetically derived materials.

- L4 ANSWER 3 OF 4 BIOSIS COPYRIGHT 2001 BIOSIS
- AN 1994:255925 BIOSIS
- DN PREV199497268925
- TI Differences in ultraviolet absorbance of tetrahydroiso-alpha-acid components.
- AU Hay, Bruce A.; Homiski, John W.; Howie, Jack L.
- CS Pfizer Cent. Res., Groton, CT 06340 USA
- SO Journal of the American Society of Brewing Chemists, (1994) Vol. 52, No. 2, pp. 54-56.
 ISSN: 0361-0470.

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\mathsf{DT}
     Article
LA
    English
     ANSWER 4 OF 4 BIOSIS COPYRIGHT 2001 BIOSIS
L4
     1991:454197 BIOSIS
ΑN
DN
     BA92:98977
     A SIMPLIFIED METHOD FOR SYNTHESIS OF TETRAHYDROISO-ALPHA
TT
     -ACID STANDARDS FOR HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY.
     HAY B A; HOMISKI J W; PRIEST M A
ΑU
     PFIZER CENTRAL RESEARCH, GROTON, CT 06340, USA.
CS
     J AM SOC BREW CHEM, (1991) 49 (3), 115-118.
SO
     CODEN: JSBCD3. ISSN: 0361-0470.
     BA; OLD
FS
    English
LΑ
     A simplified method for synthesis of pure tetrahydroiso-.
AΒ
     alpha.-acid homologs for use as high-performance liquid
     chromatography standards was developed. The synthesis involved converting
     phloroglucinol to .beta.-acids followed by hydrogenation to
     4-desoxytetrahydro-.alpha.-acids, oxidation to tetrahydro-.alpha.-acids,
     and isomerization to tetrahydroiso-.alpha.-acids. Carbon and proton
     nuclear magnetic resonance spectra of the standards showed that each
     consisted of a single isomer. The standards were assigned the cis
     configuration based on a comparison of the carbon nuclear magnetic
     resonance spectra with those of the isohumulones.
=> d his
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     FILE 'CA' ENTERED AT 20:37:08 ON 30 AUG 2001
L1
          38123 S (S. AUREUS OR STAPHYLOCOCCUS AUREUS)/BI,AB
T.2
              0 S L1 AND (HEXAHYDRO BETA ACID OR HEXAHYDRO BETA SALT OR
TETRAHY
     FILE 'USPATFULL, EMBASE, MEDLINE, BIOSIS' ENTERED AT 20:42:05 ON 30 AUG
L3
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L4 4 S (HEXAHYDRO BETA ACID OR HEXAHYDRO BETA SALT OR TETRAHYDROISO

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